

January 29, 2020

Received 1/30/20  
C/015/0009  
Task #6060

Permit Supervisor, Utah Coal Regulatory Program  
Utah Division of Oil, Gas and Mining  
1594 West North Temple, Suite 1210  
PO Box 145801  
Salt Lake City, UT 84114-5801

**Re: Waste Rock Site Source Information Amendment, Fossil Rock Mine, Canyon Fuel Company, LLC, Permit Number C/015/0009**

Dear Permit Supervisor,

This amendment includes updated information regarding the source of waste rock for the Fossil Rock Waste Rock Site. This amendment includes red text that represents the new narrative and additional information added to an appendix.

Thank you for reviewing this amendment. If you have questions or need additional information, please contact Bryant Bunnell at (435) 286-4490.

Regards,



Bryant W. Bunnell  
Environmental Engineer

Wolverine Fuels, LLC  
Canyon Fuel Company, LLC  
P: (435) 286 – 4490  
E: [bbunnell@wolverinefuels.com](mailto:bbunnell@wolverinefuels.com)

Encl.

cc: DOGM Correspondence File

## APPLICATION FOR COAL PERMIT PROCESSING

Permit Change  New Permit  Renewal  Exploration  Bond Release  Transfer

**Permittee:** Canyon Fuel Company, LLC

**Mine:** Fossil Rock Mine, WRS

**Permit Number:** C/015/0009

**Title:** WRS - Waste Rock Source Information Update

**Description,** Include reason for application and timing required to implement:

**Instructions:** If you answer yes to any of the first eight (gray) questions, this application may require Public Notice publication.

- Yes  No 1. Change in the size of the Permit Area? Acres: \_\_\_\_\_ Disturbed Area: \_\_\_\_\_  increase  decrease.
- Yes  No 2. Is the application submitted as a result of a Division Order? DO# \_\_\_\_\_
- Yes  No 3. Does the application include operations outside a previously identified Cumulative Hydrologic Impact Area?
- Yes  No 4. Does the application include operations in hydrologic basins other than as currently approved?
- Yes  No 5. Does the application result from cancellation, reduction or increase of insurance or reclamation bond?
- Yes  No 6. Does the application require or include public notice publication?
- Yes  No 7. Does the application require or include ownership, control, right-of-entry, or compliance information?
- Yes  No 8. Is proposed activity within 100 feet of a public road or cemetery or 300 feet of an occupied dwelling?
- Yes  No 9. Is the application submitted as a result of a Violation? NOV # \_\_\_\_\_
- Yes  No 10. Is the application submitted as a result of other laws or regulations or policies?

*Explain:* \_\_\_\_\_

- Yes  No 11. Does the application affect the surface landowner or change the post mining land use?
- Yes  No 12. Does the application require or include underground design or mine sequence and timing? (Modification of R2P2)
- Yes  No 13. Does the application require or include collection and reporting of any baseline information?
- Yes  No 14. Could the application have any effect on wildlife or vegetation outside the current disturbed area?
- Yes  No 15. Does the application require or include soil removal, storage or placement?
- Yes  No 16. Does the application require or include vegetation monitoring, removal or revegetation activities?
- Yes  No 17. Does the application require or include construction, modification, or removal of surface facilities?
- Yes  No 18. Does the application require or include water monitoring, sediment or drainage control measures?
- Yes  No 19. Does the application require or include certified designs, maps or calculation?
- Yes  No 20. Does the application require or include subsidence control or monitoring?
- Yes  No 21. Have reclamation costs for bonding been provided?
- Yes  No 22. Does the application involve a perennial stream, a stream buffer zone or discharges to a stream?
- Yes  No 23. Does the application affect permits issued by other agencies or permits issued to other entities?

**Please attach one (1) review copy of the application.**

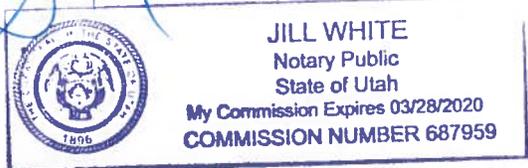
I hereby certify that I am a responsible official of the applicant and that the information contained in this application is true and correct to the best of my information and belief in all respects with the laws of Utah in reference to commitments, undertakings, and obligations, herein.

Jacob Smith  
Print Name

[Signature] Engineering Manager, 1/19/2020  
Sign Name, Position, Date

Subscribed and sworn to before me this 29th day of January, 2020

Jill White  
Notary Public  
My commission Expires: 3/28, 2020  
Attest: State of Utah ) ss:  
County of Sevier



<b>For Office Use Only:</b>	<b>Assigned Tracking Number:</b>	<b>Received by Oil, Gas &amp; Mining</b>



stored in the Waste Rock Storage Facility. These results show there is little potential for acid or toxic conditions to exist for the disposed of coal mine waste material.

Analysis results from the roof and floor samples taken at the Trail Mountain Mine are found in the Trial Mountain MPR, Volume 1, Chapter 6 and Appendix 6-2. Similar results are found in these samples.

To identify the acid- or toxic-forming potential of materials disposed of at the Waste Rock Storage Facility prior to covering the refuse pile berms for final reclamation, the top two (2) feet of the surface will be sampled according to the Division's "*Guidelines for Management of Topsoils and Overburdens*", January 2008, Tables 3 and 7. Grab samples will be taken during construction of the berm. Samples shall be collected at a rate of two samples per 200 linear foot of berm; one composite sample at 0-1 feet, and one sample at 1-2 feet. Suitability of the coal mine waste materials shall be evaluated to comply with the acceptable criteria of Tables 4 and 8 of the Division's guidelines. If initial sampling finds that the material does not comply with the acceptable criteria, than additional sampling will be implemented to define the extent of the problem material. All unacceptable material will be removed, buried, and covered with 4 feet of non-acid/non-toxic forming materials.

The Savage Coal Terminal (SCT) is an additional potential waste rock source for the Fossil Rock Waste Rock Site. The SCT is located near Wellington, UT. It processes material from coal operations within Canyon Fuel Company (CFC) and occasionally from other sources. The refuse site at Dugout Canyon Mine has been the primary disposal site for this material. Based on analyses of numerous samples taken over many years at the Dugout Canyon site it is not anticipated that acid- or toxic-forming material will be an issue. Sample data for this waste rock material can be found in Appendix B. This material will be hauled onto the site and placed as specified on page 10 and 11 above.

#### **R645-301-540 Reclamation Plan**

#### **R645-301-541 General**

The Waste Rock Storage Facility consists of 15.82 acres of disturbed land to be used for disposal of underground development waste. An access road 1,435 feet long is constructed in conjunction with the site and involves 1.7 acres of disturbed land. The site is located on public lands managed by the US Department of the Interior, Bureau of Land Management and its principal use is wildlife habitat and livestock grazing. When the facility is completed, reclamation will return the area to these same uses.

Construction of the facility commenced as soon as the permit was issued. Sediment control measures were put in place to minimize the effects of the initial construction. Straw bales and silt fences were erected in the natural drainages to treat any runoff during the initial construction period. Interim revegetation was used on the bare slopes of the soil stockpiles and along the roadway to stabilize and prevent erosion. The topsoil stockpiles were marked as such. Drainage structures were constructed and maintained to ensure that they were in good repair

## Appendix B

Waste Rock Sample Analyses  
Savage Coal Terminal



Date: 1/22/2020

**CLIENT:** Canyon Fuel Company  
**Project:** Dugout Canyon Mine  
**Lab Order:** S1910274

**CASE NARRATIVE**  
**Report ID:** S1910274001

Sample WR 2019-07 was received on October 15, 2019.

Samples were analyzed using the methods outlined in the following references:

- U.S.E.P.A. 600/2-78-054 "Field and Laboratory Methods Applicable to Overburden and Mining Soils", 1978
- American Society of Agronomy, Number 9, Part 2, 1982
- USDA Handbook 60 "Diagnosis and Improvement of Saline and Alkali Soils", 1969
- Wyoming Department of Environmental Quality, Land Quality Division, Guideline No. 1, 1984
- New Mexico Overburden and Soils Inventory and Handling Guideline, March 1987
- State of Utah, Division of Oil, Gas, and Mining: Guidelines for Management of Topsoil and Overburden for Underground and Surface Coal Mining, April 1988
- Montana Department of State Lands, Reclamation Division: Soil, Overburden, and Regraded Spoil Guidelines, December 1994
- State of Nevada Modified Sobek Procedure
- Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition

All Quality Control parameters met the acceptance criteria defined by EPA and Pace Analytical (Formerly Inter-Mountain Laboratories) except as indicated in this case narrative.

Reviewed by:

*Karen A Secor*

Karen Secor, Soil Lab Supervisor



Formerly Inter-Mountain Laboratories

1673 Terra Avenue Sheridan, WY 82801

ph: (307) 672-8945

**Soil Analysis Report**

**Canyon Fuel Company**

Dugout Canyon Mine  
P.O. Box 1029  
Wellington, UT 84542

Report ID: S1910274001

Project: Dugout Canyon Mine

Date Received: 10/15/2019

Date Reported: 1/22/2020

Work Order: S1910274

Lab ID	Sample ID	pH	Saturation	Electrical Conductivity	Field Capacity	Wilting Point	Calcium PE	Magnesium PE	Potassium PE	Sodium PE	SAR
		s.u.	%	dS/m	%	%	meq/L	meq/L	meq/L	meq/L	
S1910274-001	WR 2019-07	8.1	30.7	0.56	20.8	4.6	1.06	1.03	0.49	3.58	3.50

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H2OSol= water soluble, AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate

Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential

Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage, TOC=Total Organic Carbon

Reviewed by: Karen A Secor  
Karen Secor, Soil Lab Supervisor



Formerly Inter-Mountain Laboratories

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**Soil Analysis Report**  
**Canyon Fuel Company**

Dugout Canyon Mine  
P.O. Box 1029  
Wellington, UT 84542

Report ID: S1910274001

Project: Dugout Canyon Mine

Date Received: 10/15/2019

Date Reported: 1/22/2020

Work Order: S1910274

Lab ID	Sample ID	Nitrogen								
		Sand %	Silt %	Clay %	Texture	Boron ppm	Phosphorus ppm	Selenium ppm	Nitrate(as N) ppm	TKN %
S1910274-001	WR 2019-07	67.0	21.0	12.0	Sandy Loam	0.68	3	0.16	0.5	0.13

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H2OSol= water soluble, AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate

Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential

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**Soil Analysis Report**  
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Report ID: S1910274001

Project: Dugout Canyon Mine

Date Received: 10/15/2019

Date Reported: 1/22/2020

Work Order: S1910274

Lab ID	Sample ID	Available	Exchangeable	Total	
		Sodium	Sodium	Carbon	TOC
		meq/100g	meq/100g	%	%
S1910274-001	WR 2019-07	0.46	0.35	2.7	1.9

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H2OSol= water soluble, AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate

Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential

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**Soil Analysis Report**

**Canyon Fuel Company**

Dugout Canyon Mine  
P.O. Box 1029  
Wellington, UT 84542

Report ID: S1910274001

Project: Dugout Canyon Mine

Date Received: 10/15/2019

Date Reported: 1/22/2020

Work Order: S1910274

Lab ID	Sample ID	Total Sulfur	T.S. AB	Neutral. Potential	T.S. ABP	Sulfate Sulfur	Pyritic Sulfur	Organic Sulfur	PyriticS AB	PyriticS ABP
		%	t/1000t	t/1000t	t/1000t	%	%	%	t/1000t	t/1000t
S1910274-001	WR 2019-07	0.13	4.07	64.4	60.4	0.02	0.08	0.03	2.50	61.9

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H2OSol= water soluble, AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate

Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential

Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage, TOC=Total Organic Carbon

Reviewed by: Karen A Secor  
Karen Secor, Soil Lab Supervisor





Date: 1/22/2020

**CLIENT:** Canyon Fuel Company  
**Project:** Dugout Canyon Mine  
**Lab Order:** S1910381

**CASE NARRATIVE**  
**Report ID:** S1910381001

Sample WR 2019-08 was received on October 22, 2019.

Samples were analyzed using the methods outlined in the following references:

- U.S.E.P.A. 600/2-78-054 "Field and Laboratory Methods Applicable to Overburden and Mining Soils", 1978
- American Society of Agronomy, Number 9, Part 2, 1982
- USDA Handbook 60 "Diagnosis and Improvement of Saline and Alkali Soils", 1969
- Wyoming Department of Environmental Quality, Land Quality Division, Guideline No. 1, 1984
- New Mexico Overburden and Soils Inventory and Handling Guideline, March 1987
- State of Utah, Division of Oil, Gas, and Mining: Guidelines for Management of Topsoil and Overburden for Underground and Surface Coal Mining, April 1988
- Montana Department of State Lands, Reclamation Division: Soil, Overburden, and Regraded Spoil Guidelines, December 1994
- State of Nevada Modified Sobek Procedure
- Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition

All Quality Control parameters met the acceptance criteria defined by EPA and Pace Analytical (Formerly Inter-Mountain Laboratories) except as indicated in this case narrative.

Reviewed by: *Karen A Secor*

Karen Secor, Soil Lab Supervisor



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**Soil Analysis Report**  
**Canyon Fuel Company**

Dugout Canyon Mine  
P.O. Box 1029  
Wellington, UT 84542

Report ID: S1910381001

Project: Dugout Canyon Mine

Date Received: 10/22/2019

Date Reported: 1/22/2020

Work Order: S1910381

Lab ID	Sample ID	pH	Saturation	Electrical	Field	Wilting	Calcium	Magnesium	Potassium	Sodium	SAR
		s.u.	%	Conductivity	Capacity	Point	PE	PE	PE	PE	
				dS/m	%	%	meq/L	meq/L	meq/L	meq/L	
S1910381-001	WR 2019-08	8.3	33.2	1.08	19.6	5.4	0.59	0.46	0.27	12.0	16.6

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H2OSol= water soluble, AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate

Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential

Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage, TOC=Total Organic Carbon

Reviewed by: Karen A Secor  
Karen Secor, Soil Lab Supervisor



Formerly Inter-Mountain Laboratories

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ph: (307) 672-8945

**Soil Analysis Report**  
**Canyon Fuel Company**

Dugout Canyon Mine  
P.O. Box 1029  
Wellington, UT 84542

Report ID: S1910381001

Project: Dugout Canyon Mine

Date Received: 10/22/2019

Date Reported: 1/22/2020

Work Order: S1910381

Lab ID	Sample ID	Nitrogen								
		Sand %	Silt %	Clay %	Texture	Boron ppm	Phosphorus ppm	Selenium ppm	Nitrate(as N) ppm	TKN %
S1910381-001	WR 2019-08	65.0	21.0	14.0	Sandy Loam	1.44	3	0.04	0.3	0.16

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H2OSol= water soluble, AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate

Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential

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Reviewed by: Karen A Secor  
Karen Secor, Soil Lab Supervisor



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**Soil Analysis Report**  
**Canyon Fuel Company**

Dugout Canyon Mine  
P.O. Box 1029  
Wellington, UT 84542

Report ID: S1910381001

Project: Dugout Canyon Mine

Date Received: 10/22/2019

Date Reported: 1/22/2020

Work Order: S1910381

Lab ID	Sample ID	Available	Exchangeable	Total	
		Sodium	Sodium	Carbon	TOC
		meq/100g	meq/100g	%	%
S1910381-001	WR 2019-08	1.74	1.35	10.9	7.9

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H2OSol= water soluble, AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate

Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential

Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage, TOC=Total Organic Carbon

Reviewed by: Karen A Secor  
Karen Secor, Soil Lab Supervisor



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**Soil Analysis Report**  
**Canyon Fuel Company**

Dugout Canyon Mine  
P.O. Box 1029  
Wellington, UT 84542

Report ID: S1910381001

Project: Dugout Canyon Mine

Date Received: 10/22/2019

Date Reported: 1/22/2020

Work Order: S1910381

Lab ID	Sample ID	Total Sulfur	T.S. AB	Neutral. Potential	T.S. ABP	Sulfate Sulfur	Pyritic Sulfur	Organic Sulfur	PyriticS AB	PyriticS ABP
		%	t/1000t	t/1000t	t/1000t	%	%	%	t/1000t	t/1000t
S1910381-001	WR 2019-08	0.14	4.32	249	245	0.04	0.11	0.07	3.44	246

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H2OSol= water soluble, AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate

Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential

Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage, TOC=Total Organic Carbon

Reviewed by: Karen A Secor  
Karen Secor, Soil Lab Supervisor

Inter-Mountain Laboratories, Inc.  
**CHAIN OF CUSTODY**  
**DUGOUT CANYON MINE**

51910381-001

Sample Identification	WR 2019-08																		
Sample Date	10/18/19																		
Number of Samples	1																		
Type of Soil	WR																		
<b>Laboratory Analyses</b>																			
Table 6, Topsoil & Overburden Parameters	X																		
AND																			
Texture	X																		
pH	X																		
Electrical Conductivity	X																		
Total Carbon	X																		
SAR	X																		
Water Holding Capacity	X																		
Plant Available Nitrogen	X																		
Phosphorus	X																		
Pyritic sulfur	X																		
T.S. ABP	X																		

WR (Waste Rock), SS (Sub-Soil), TS (Topsoil)

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME
Justin Slaughter <i>Justin Slaughter</i>	10/18/2019	12:30 PM	<i>Kare A Secor</i>	10/22/19	



Date: 1/22/2020

**CLIENT:** Canyon Fuel Company  
**Project:** Dugout Canyon Mine  
**Lab Order:** S1910472

**CASE NARRATIVE**  
**Report ID:** S1910472001

Sample WR 2019-08 was received on October 30, 2019.

Samples were analyzed using the methods outlined in the following references:

- U.S.E.P.A. 600/2-78-054 "Field and Laboratory Methods Applicable to Overburden and Mining Soils", 1978
- American Society of Agronomy, Number 9, Part 2, 1982
- USDA Handbook 60 "Diagnosis and Improvement of Saline and Alkali Soils", 1969
- Wyoming Department of Environmental Quality, Land Quality Division, Guideline No. 1, 1984
- New Mexico Overburden and Soils Inventory and Handling Guideline, March 1987
- State of Utah, Division of Oil, Gas, and Mining: Guidelines for Management of Topsoil and Overburden for Underground and Surface Coal Mining, April 1988
- Montana Department of State Lands, Reclamation Division: Soil, Overburden, and Regraded Spoil Guidelines, December 1994
- State of Nevada Modified Sobek Procedure
- Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition

All Quality Control parameters met the acceptance criteria defined by EPA and Pace Analytical (Formerly Inter-Mountain Laboratories) except as indicated in this case narrative.

Reviewed by:

*Karen A Secor*

Karen Secor, Soil Lab Supervisor



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**Soil Analysis Report**  
**Canyon Fuel Company**

Dugout Canyon Mine  
P.O. Box 1029  
Wellington, UT 84542

Report ID: S1910472001

Project: Dugout Canyon Mine

Date Received: 10/30/2019

Date Reported: 1/22/2020

Work Order: S1910472

Lab ID	Sample ID	pH	Saturation	Electrical	Field	Wilting	Calcium	Magnesium	Potassium	Sodium	SAR
		s.u.	%	Conductivity	Capacity	Point	PE	PE	PE	PE	
				dS/m	%	%	meq/L	meq/L	meq/L	meq/L	
S1910472-001	WR 2019-08	7.3	28.4	1.99	19.4	5.2	4.72	4.95	0.64	16.6	7.55

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H2OSol= water soluble, AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate

Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential

Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage, TOC=Total Organic Carbon

Reviewed by: Karen A Secor  
Karen Secor, Soil Lab Supervisor



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**Soil Analysis Report**

**Canyon Fuel Company**

Dugout Canyon Mine  
P.O. Box 1029

Wellington, UT 84542

Report ID: S1910472001

Date Reported: 1/22/2020

Work Order: S1910472

Project: Dugout Canyon Mine

Date Received: 10/30/2019

Lab ID	Sample ID	Nitrogen								
		Sand %	Silt %	Clay %	Texture	Boron ppm	Phosphorus ppm	Selenium ppm	Nitrate(as N) ppm	TKN %
S1910472-001	WR 2019-08	64.0	22.0	14.0	Sandy Loam	1.07	2	0.04	0.2	0.17

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H2OSol= water soluble, AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate

Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential

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**Soil Analysis Report**

**Canyon Fuel Company**

Dugout Canyon Mine  
P.O. Box 1029  
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Report ID: S1910472001

Project: Dugout Canyon Mine

Date Received: 10/30/2019

Date Reported: 1/22/2020

Work Order: S1910472

Lab ID	Sample ID	Available	Exchangeable	Total	TOC
		Sodium	Sodium	Carbon	
		meq/100g	meq/100g	%	%
S1910472-001	WR 2019-08	1.09	0.62	12.6	7.8

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H2OSol= water soluble, AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate

Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential

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**Soil Analysis Report**  
**Canyon Fuel Company**

Dugout Canyon Mine  
P.O. Box 1029  
Wellington, UT 84542

Report ID: S1910472001

Project: Dugout Canyon Mine

Date Received: 10/30/2019

Date Reported: 1/22/2020

Work Order: S1910472

Lab ID	Sample ID	Total Sulfur	T.S. AB	Neutral. Potential	T.S. ABP	Sulfate Sulfur	Pyritic Sulfur	Organic Sulfur	PyriticS AB	PyriticS ABP
		%	t/1000t	t/1000t	t/1000t	%	%	%	t/1000t	t/1000t
S1910472-001	WR 2019-08	1.46	45.5	408	362	<0.01	1.53	0.16	47.8	360

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H2OSol= water soluble, AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate

Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential

Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage, TOC=Total Organic Carbon

Reviewed by: Karen A Secor  
Karen Secor, Soil Lab Supervisor

Inter-Mountain Laboratories, Inc.  
**CHAIN OF CUSTODY**  
**DUGOUT CANYON MINE**

51910472-001

Sample Identification	WR 2019-08																			
Sample Date	10/28/19																			
Number of Samples	1																			
Type of Soil	WR																			
<b>Laboratory Analyses</b>																				
Table 6, Topsoil & Overburden Parameters	X																			
<b>AND</b>																				
Texture	X																			
pH	X																			
Electrical Conductivity	X																			
Total Carbon	X																			
SAR	X																			
Water Holding Capacity	X																			
Plant Available Nitrogen	X																			
Phosphorus	X																			
Pyritic sulfur	X																			
T.S. ABP	X																			

WR (Waste Rock), SS (Sub-Soil), TS (Topsoil)

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME
Seth McCourt	10/28/2019	12:30 PM	<i>Karen Bee</i>	10/30/19	1300